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WHAT IS CLAIMED IS:

1. A method of detecting and/or separating proteins by gel electrophoresis comprising the steps of:

preparing a sample mixture by dissolving or dispersing a protein-containing sample in water or an aqueous buffer;

adding a detergent to the sample mixture to coat or otherwise associate with the surface of protein(s) in the sample mixture;

placing the sample mixture on an inert, polymeric gel support matrix of the type used for gel electrophoresis; and

subjecting the sample mixture on the support matrix to an electric field in the presence of a fluorescent dye in a running buffer having a concentration of detergent less than 0.10%, so as to stain and separate proteins in the sample mixture into discrete bands based on molecular weight.

- 2. The method of claim 1 gel electrophoresis is standard SDS-PAGE gel electrophoresis
 - 3. The method of claim 1 wherein the detergent is SDS
- 4. The method of claim 1 wherein the fluorescent dye is selected from the group consisting of Nile red, CAS# 7385-67-3, also known as 9-diethylamino-5H-benzo(α)phenoxazine-5-one). and Phosphine dyes.
 - 5. The method of claim 4 wherein the fluorescent dye is Nile Red.
 - 6. The method of claim 5 wherein the fluorescent dye is a Phosphine dye.
- 7. The method of claim 1 wherein the running buffer comprises an aqueous solution of 0.025 M Tris (tris(hydroxy methyl)amino-methane) and 0.192 M glycine at about pH 8.3.
- 8. The method of claim 1 wherein the concentration of detergent in the running buffer is less than 0.075 % v/v.
- 9. The method of claim 8 wherein the concentration of detergent in the running buffer is 0.05 % v/v.
- 10. The method of claim 1 comprising the further step of visualizing the separated protein(s) on the support matrix.
 - 11. The method of claim 10 wherein the step of visualizing comprises: illuminating the support matrix with UV illumination.
 - 12. The method of claim 10 comprising the further step of: destaining the gel prior to the step of visualizing.
 - 13. The method claim 12 wherein the step of destaining comprises:

WO 2004/038423 PCT/US2003/033819

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washing the gel with water.

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- 14. The method of claim 12 wherein the step of destaining comprises: washing the gel with a destaining solution containing potassium chloride (KCl) in deionized water.
- 15. The method of claim 1 comprising the further step of recovering the separated protein fraction(s) for further processing, purification or analysis.
- 16. The method of claim 15 comprising subjecting the separated protein fraction(s) to further processing, purification, or analysis
- 17. A running buffer composition for gel electrophoresis comprising: a fluorescent dye in an aqueous buffered solution having a concentration of detergent less than 0.10% (v/v).
- 18. The running buffer of claim 17 wherein the aqueous buffered solution is an aqueous solution of 0.025 M Tris (tris(hydroxy methyl)amino-methane) and 0.192 M glycine at about pH 8.3.
- 19. The running buffer of claim 18 wherein the concentration of detergent is 0.05% (v/v)
- 20. The running buffer composition of claim 17 of claim 1 wherein the fluorescent dye is selected from the group consisting of Nile red, CAS#7385-67-3, also known as 9-diethylamino-5H-benzo(a)phenoxazine-5-one). and Phosphine dyes.